Before the
Federal Communications Commission
Washington D.C. 20054

In the Matter of	)	
	)	
Review of the Emergency Alert System	)	EB Docket No. 04-296
Emergency Alert System	)	
	)	

COMMENTS OF AZOS AI, LLC

Dated: January 24, 2006

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SUMMARY

Azos AI, LLC ("Azos"), an innovator of intelligent wireless communication solutions, urges the Commission to modernize the nation's Emergency Alert System ("EAS") by requiring all wireless carriers to transmit emergency messages over their networks. While broadcast media will remain an important component of the EAS, the widespread proliferation of mobile communications devices presents an important opportunity for the Commission to forge the "last link" in the emergency communication chain by ensuring that vital alert messages reach individuals with a need to know on a timely basis.

Simply requiring wireless carriers to transmit emergency messages, however, is not enough. Such messages have to be received, authenticated and prioritized by the receiving mobile device. In this way emergency alerts can actually get through to the people who need to be warned. An essential component of any effective wireless EAS, therefore, is the incorporation of intelligent reception technology in mobile devices to perform these functions.

Intelligent reception, whereby an alert receipt is prioritized at the receiving end, can significantly improve the effectiveness of emergency communications. Instantaneous priority is achieved upon sensing a distinct emergency message from the EAS. In addition, intelligent reception authenticates the emergency communication to eliminate the risk of recipients receiving false emergency messages -- thus, relieving recipients of the necessity to check other sources to validate the communication and saving time in critical situations. Intelligent reception also results in a unique alert so that the recipient knows an emergency communication is incoming. The emergency alert can be aural, visual, and/or use other sensory elements to

support the accessibility needs of disabled persons. Further, a unique "state" or "mode" of the device is an important intelligent reception feature. This "state" would give users control over their device by permitting them to turn "off" their mobile device for purposes of regular communications while retaining the ability to receive emergency communications.

Azos has developed just such intelligent reception technology -- a patented, software-based solution that can be quickly implemented on a variety of platforms and that can be deployed in millions of mobile devices, and potentially without the need for users to return and replace their handsets. Azos stands ready to make this technology available to all wireless carriers and mobile equpiment manufacturers on reasonable and nondiscriminatory terms and conditions.

In summary, to effectively modernize the EAS, take full advantage of the best commercially available technology, and achieve the goal of alerting the American public when an emergency occurs, Azos recommends that the Commission:

1. Require wireless carriers to transmit emergency messages and require mobile devices to have intelligent reception capabilities.
2. Require unique alarm activation upon reception of an emergency communication in a mobile device.
3. Require unique alarm choices be available to the mobile device user, thus supporting accessibility by disabled persons.
4. Require secure methods for validating and authenticating emergency communications to mobile devices, thus obtaining the confidence of the American public.

5. Address enforcement provisions for sending false emergency messages or compromising the integrity of the EAS.
6. Promote user control of mobile devices by requiring mobile devices to have a "state" that permits emergency communication only to activate the device.

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COMMENTS OF AZOS AI, LLC

Azos AI, LLC ("Azos"), an innovator in intelligent wireless communication solutions, hereby submits these comments in response to the Notice of Proposed Rulemaking ("Notice") in the above-captioned proceeding in support of needed modernization to the Emergency Alert System ("EAS").[1]

Azos welcomes the opportunity to provide these comments to the Federal Communications Commission ("FCC" or "Commission") on the need for extending the EAS to include wireless mobile communication devices. As the Commission acknowledges in the Notice: "[w]ireless products are becoming an equal to television and radio as an avenue to reach the American public quickly and efficiently."[2] While traditional mass media will continue to play an important role in the public dissemination of vital emergency alert messages, a recent

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[1] *See In the Matter of Review of the Emergency Alert System*, FCC 05-191, First Report and Order and further Notice of Proposed Rulemaking, EB Docket No. 04-296 (rel. Nov. 10, 2005), *published* 70 Fed. Reg. 71,072 (2005).

[2] *Id*. at ¶ 69.

study shows that emergency broadcast messages often do not reach a substantial portion of the population in a timely fashion. The Commission can bridge this gap in the nation's EAS by requiring emergency messages be delivered to mobile communication devices, including the cell phones and personal digital assistants ("PDAs") possessed by most Americans.[3] But merely requiring such messages to be carried by wireless carriers is not enough. An effective mobile EAS must include an intelligent reception component, whereby the mobile device authenticates and prioritizes emergency communications to ensure that such alerts reach the people who need it most on a timely basis.

I. ABOUT AZOS

Azos is a privately-held corporation that develops innovative personal intelligence technologies that leverage artificial intelligence. Our patented intelligent software capabilities help bridge the gap in existing emergency communication by advancing communication devices from "passive" receivers to controlled "smart" receivers. Our intelligent technologies empower consumers — first responders, everyday citizens and the disabled public — to utilize their cell phones, PDA's or computers as intelligent personal lifelink devices. With the introduction of Smart Emergency Alert™ and GetMeNow™, our incoming emergency communication technology can literally be embedded in every type of communication device. With these

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[3] *In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, Tenth Annual Report, 20 FCC Rcd 15908, at ¶ 5 (2005) ("Tenth CMRS Report") (reporting a nationwide penetration rate of 62% for mobile telephones).

products, secure, prioritized communication can be received providing time-critical and potentially life-saving information anytime, anywhere.[4]

Importantly, Azos's patented technology[5] is a software-based solution. This means that it can be quickly implemented on a variety of platforms and rapidly deployed in tens of millions of mobile devices, and potentially without the need for users to return and replace their handsets.[6] Azos stands ready to make this technology available to all wireless carriers and mobile equpiment manufacturers on reasonable and nondiscriminatory terms and conditions.[7]

II. THE NEED FOR A MOBILE EAS WITH INTELLIGENT RECEPTION

A ubiquitous communication technology that Americans embrace is the mobile device. The EAS needs to be updated by leveraging this existing technological means, a fact that is acknowledged by the Commission. Mobile devices comprise one of the broadest and fastest evolving communication platforms. With the growing reliance of Americans on mobile devices,

[4] For more information about Azos, please visit http://www.azosai.com and see Attachment 1 (Brochure).

[5] *See* U.S. Patent No. 6,359,970 B1.

[6] Carriers today can wirelessly update some of the software for their subscribers' devices. Whether the software of a mobile device can be updated wirelessly to incorporate intelligent reception capabilities will depend on the memory and software architecture of the device in question.

[7] The fact that a technology may be patented is not an impediment to its inclusion in a Commission mandate, provided that patent holders are prepared to license the use of such technology on reasonable and nondiscriminatory terms and conditions. *See*, *e.g.*, *In the Matter of Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, 11 FCC Rcd 17771, at ¶ 55 (1996); *In the Matter of Amendment of the Commission's Rules to Establish a Single AM Radio Stereophonic Transmitting Equipment Standard*, Report and Order, 8 FCC Rcd 8216, at ¶ 29 (1993); *see also* Public Notice, *Revised Patent Procedures of the Federal Communications Commission*, 3 F.C.C. 2d 26 (1966).

the need exists to incorporate this communication means into the EAS if emergency alerts are to reach the majority of effected citizens during or in advance of an emergency.

That mobile devices need to be included in the EAS is supported by the results of the *Connecticut Emergency Broadcast System Survey*.[8] While traditional mass media will always be an important component of any EAS, this study shows that broadcast emergency messages may not reach a substantial portion of the population who need to be alerted. In the Connecticut Study, an emergency message was broadcast on area TV and radio stations for three minutes starting around 2 p.m. on a Tuesday. Only 9% of the residents saw or heard the emergency alert live via such media. Another 2% were contacted by a friend or relative as the emergency alert was broadcast, which yields only 11% of residents who received the emergency communication in real-time. Of this, about 75% were at home. In view of these statistics, the Commission must consider expanding the EAS beyond mass media by embracing other communication means to successfully reach the intended recipients. It is a fact of life that people use different communication technologies for receiving information, depending on their situation, activities, and location. The increasing ubiquity of mobile devices throughout the United States,[9] and the propensity for Americans to carry their cell phones with them wherever

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[8] *See* CENTER FOR SURVEY, RESEARCH AND ANALYSIS, CONNECTICUT EMERGENCY BROADCAST SYSTEM SURVEY: PUBLIC REACTION TO THE ERRONEOUS STATEWIDE BROADCAST OF FEBRUARY 1ST, 2005, FULL REPORT, at 5 (March/April 2005) ("Connecticut Study"), *available at* http://www.riskinstitute.org/newsite/uploads/Conn_Emergency_Broadcast_Survey.pdf (last visited Jan. 23, 2006).

[9] According to the Commission, 184.7 million Americans had mobile telephones as of December 2004, up from 160.6 million at the end of 2003. *See* Tenth CMRS Report at ¶ 161.

they go, suggests that the next logical extension of the EAS is to mobile communications devices.

Pilot tests have already been conducted under the Integrated Public Alert and Warning System ("IPAWS") whereby emergency alerts were successfully transmitted to personal communication devices. The next step is to require all wireless carriers to have the capability to transmit emergency messages. In order to accomplish the goal of effectively reaching a majority of citizens during or in advance of an emergency, a mobile EAS must also:

1. be able to successfully "connect" with the mobile device, with priority over all other communications;
2. be able to get the attention of the mobile device users (*i.e.*, to "alarm" the user), including persons with disabilities; and
3. invoke the appropriate recipient response.

"Connect" with Mobile Devices

Mobile device utilization is time-of-day, event, and activity dependent. Instances exist where the mobile device user desires to turn their device "off" (*e.g.*, while sleeping, in the theater, in meetings, or when the user does not wish to be reached). Currently, when the device is in a true "off" state, no communication can be received, not even emergency messages. Americans want to be in control of their own devices, and an effective mobile EAS would have to take this into account.

Alarming the User

American's utilize mobile device ring tones by:

a. using one ring tone for all incoming communication; or

b. using different ring tones for different callers or originating sources.

Many mobile device users response to an incoming communication is dependent on the ring tone or originating source (e.g., caller identification). People let incoming calls go directly to their voicemail when they are busy or do not feel like answering their phone. Thus, if a normal ring tone associated with all communication is activated upon receiving an emergency communication, it may not be effective. As a result, in an effective mobile EAS, the mobile device must be able to recognize an EAS communication and to generate a unique alert. Citizens can then take the necessary informed actions. This is especially true for those with accessibility needs.

Mobile Device User Response

The potential for false emergency alerts is all too real, along with the associated risks of unnecessary or inappropriate responses from recipients of such messages. The recipient of a mobile EAS alert must have assurance that the emergency communication is valid and respond accordingly to protect their life and property. As reported in the *Connecticut Emergency Broadcast System Survey*, of the citizens that heard the emergency broadcast:[10]

a. 28% didn't believe it or thought it was a test;

b. 20% were concerned, afraid, anxious;

c. 16% were confused, unsure; and

d. 11% ignored the emergency broadcast completely.

[10] Connecticut Study at 5.

The study further determined that the majority of people who received the emergency broadcast responded by seeking to validate the communication — their first response was to seek confirmation of the emergency message.[11] Authenticating the emergency broadcast took precedence over heeding the alert instructions or taking any precautions. Thus, the EAS must be trusted by American citizens to be effective.

Intelligent Reception

The ability of the EAS to "connect" with the mobile device, to alert the user and to elicit the appropriate response must be incorporated into a mobile EAS if the system is to be effective. This can best be achieved by building intelligent reception capabilities into the mobile communications device. If there were no intelligent reception of emergency messages by mobile devices:

a. there would be no security at the point of reception (regardless of the security that may be inherent in the EAS transmission equipment);
b. measures would not exist in mobile devices to prevent hackers from sending false emergency messages, thus creating the potential for havoc among the American public;
c. the emergency message would be received as just another communication and the recipient would not recognize that the incoming communication as an emergency alert, resulting in delay or failure to take appropriate action; when

[11] *Id*. at 6.

time is critical, response must be immediate for the recipient to benefit from the emergency alert warning; and

d. Americans expect to have control of their mobile devices; if a device must be in the "on" state to receive an emergency communication, recipients would be faced with a choice between missing possible emergency messages by turning their devices "off" or receiving every incoming communication by leaving their device "on" -- resulting in a less effective (and more inconvenient) mobile EAS.

For all of these reasons, intelligent reception should be incorporated into any mobile EAS solution to overcome these problems.

In addition, while these comments are focused on common mobile devices today, such as cell phones and PDAs, any mobile EAS solution should also prepare for "over the horizon" issues and technological advances in mobile communications. Exciting advances such as mobile TV, location based services, more robust wireless Internet solutions, and shopping with your mobile device, are all targeted by the industry. Along with these advances come the plague of hackers, viruses, and identity theft issues that must be addressed for the mobile platform to protect American citizens and take measures to ensure the EAS is a "trusted" system. A requirement to incorporate intelligent reception capabilities in mobile devices is an important precursor for addressing these issues as they emerge.

III. SPECIFIC RECOMMENDATIONS

"Connect" with Mobile Devices

Americans want to be in control of their own devices. Azos recommends that the Commission mandate a requirement that mobile devices provide a "state" for the reception of emergency communications only. This would not be a true "off" state, but a state in which all communications other than emergency communications would be blocked. An emergency incident can occur at anytime so, the EAS needs to be capable of reaching the mobile device users at anytime. For example, such a solution would provide a means to alert the people in Indiana who had only a 30 minute tornado warning at 2 a.m.[12] Most were in bed sleeping. Their mobile device could have been utilized to ensure that everyone received the emergency alert. This solution could also be incorporated into other wireline communication devices.

Alarm the User

Azos recommends that the Commission mandate that mobile devices provide a distinct alarm to discern an emergency communication from all others. A distinct EAS emergency alarm is needed to warn the receiving party of the urgent nature of an emergency. When seconds count, an intelligent emergency alert immediately gets the attention of the receiving party. This alert helps the Commission achieve its stated goal of providing critical information to the

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[12] *See Tornado Kills 22 in Indiana*, CNN.COM, Nov. 7, 2005, *at* http://www.cnn.com/2005/WEATHER/11/06/indiana.tornadoes/index.html (last visited Jan. 23, 2006).

recipient — minimizing confusion, fear of the unknown, and ultimately, saving lives. A distinct emergency alert from the EAS warns the receiver of the urgency in taking the call.

Accessibility Alarming

The Commission should be applauded for realizing that accessibility for disabled persons is essential for an effective EAS. The adoption of a distinct EAS emergency alarm alone would not necessarily address all of these accessibility needs. Azos recommends that the Commission mandate that mobile devices provide distinct emergency alarms that accommodate the needs of persons with disabilities, such as special vibration modes, visual displays for the hearing-impaired, as well as a special ring for the vision-impaired. The user should be able to select the alert or combination of alerts that would serve him or her best. Mobile devices already have options for the user to personalize alerts based on their needs and preferences, and such features can be adapted with little effort to serve EAS purposes.

Mobile Device User Response

Ensuring that an emergency message reaches intended recipients is not the ultimate goal of the EAS -- the ultimate goal is to provoke the appropriate response from such recipients. As noted above, the response of many Americans to a broadcast EAS message is to check its validity with other sources, which may materially delay the taking of appropriate action. The best way to address this issue is to ensure that mobile emergency messages are authenticated by the mobile device. Such authentication is also essential to prevent hackers from successfully sending false emergency messages through the EAS. This security measure would both protect EAS resource(s) and instill public confidence in the EAS. The reduced public response

time that could result from a "trusted" mobile EAS could save lives when timely public action in response to an emergency is essential.

IV. RESPONSES TO SPECIFIC QUESTIONS

1. Paragraph 69 Questions

What further steps should the Commission take to facilitate wireless provision of alert and warning?

To make reception of EAS alerts more effective in reaching the majority of affected citizens, emergency communications should be processed using intelligent reception in the mobile device where:

a. Upon reception of communication from the EAS, priority processing is activated.

b. A unique EAS alert is incorporated, which comprises:

    1. a ring tone that is unique to emergency communications;

    2. a visual alert with unique lighting and/or LED display;

    3. a unique sensory alert (i.e., vibration pattern); and

    4. alert programmability to meet the needs of disabled persons.

c. Authentication capabilities to eliminate the risk of false emergency communication; and

d. A unique mobile device "state" for individuals who do not want to receive ordinary communications but would still like to receive emergency alerts.

Should the Commission require wireless carriers to provide alerts and warnings?

The Commission should require wireless carriers to transmit emergency alerts and warnings in light of the penetration level of mobile devices (62% for mobile telephones in 2004) and the reliance of the American public on this technology for most communication needs. Many Americans will likely have their mobile communication devices with them, especially when they do not have access to either television or radio broadcasts.

In addition, commenters have identified technologies that enable wireless handsets to receive EAS alerts. We seek comment on these and other approaches to wireless alert and warning. Parties should address whether each approach permits use of a common messaging protocol.

The Commission should mandate the use of mobile devices (*i.e.*, wireless handsets) as part of the nation's EAS. To effectively take advantage of this technology, Azos' approach is to embed a software-based, real-time incoming communication controller inside wireless handsets to allow intelligent, prioritized reception of emergency communications. This software can be tailored for compatibility with a common messaging protocol such as the Common Alerting Protocol ("CAP")[13] or the ANSI/CEA Standard Performance Specification for Public Alert Receivers[14] for mobile devices. Upon the handset receiving an encoded incoming emergency communication issued from the EAS, the incoming communication controller would:

a. interrupt normal incoming communication processing;

b. perform unique processing prioritizing the EAS communication whereby --

[13] OASIS, Common Alerting Protocol, v.1.1, OASIS Standard CAP-V1.1, October 2005, Internet link: http://www.oasis-open.org/committees/emergency

[14] ANSI/CEA Standard Performance Specification for Public Alert Receivers, ANSI/CEA-2009-A, October 2005.

1. authentication processing would be performed;
2. designated EAS alerts would be activated; and
3. the EAS communication message would be provided to the user.

One simple way to authenticate emergency messages would be to have an encrypted identification assigned to identify such communications stored in the non-volatile memory of the mobile device. This encrypted EAS identification is transmitted along with the incoming communication to "handshake" with the device in validation of the communication source (i.e., the source originated from official EAS equipment).

Finally, we seek comment on whether each approach would require customers to return and replace their current handsets and, if so, whether any financial impact of handset return would offset the public benefit of providing wireless alert and warning? Parties should address economic as well as technical issues in their comments.

Importantly, because Azos's proposed solution is software-based, it can be quickly implemented (conceivably in a matter of months) and rapidly deployed in tens of millions of existing mobile devices, potentially without the user having to return or replace his or her device.[15] Wireless device manufactures and operators could provide a download of the embedded communication controller software inside their mobile device product(s)[16] and have new product offerings that incorporate the embedded intelligent reception of emergency communication. In this regard, the integration of intelligent reception of emergency

[15] *See supra* note 6.

[16] Changing mobile device software at the incoming communication control level is dependent on the particular design of the device. *See supra* note 6.

communications would be similar to typical value-added technology insertions that are not cost prohibitive but embraced by the industry in pursuit of technological advancements. Moreover, the benefits of intelligent reception in mobile devices would far outweigh any burdens on manufacturers and operators. Not only would there be the many public safety benefits associated with a more effective EAS, but such technology could also be leveraged for innovative commercial applications.

2. Paragraph 72 Questions

Elements of proposed standards could be the length of time it takes to get a particular message, and the accuracy of the message.

Intelligent reception is a real-time process invoked in a mobile device upon reception of an emergency communication. Accuracy of the message is not an issue provided the message is not corrupted during transmission and the Commission mandates a particular alert protocol standard. The interface code for the intelligent embedded software capability would adhere to the mandated protocol standard.

3. Paragraph 80 Questions

We also seek comment on how any next-generation, digitally-based alert and warning system can be developed in a manner that assures that persons with disabilities will be given equal access to alert and warning as other Americans

As noted above, the user interface of mobile devices should be adaptable to meet the broader needs of people with disabilities. These user interface accessibility needs were presented at the “Accessible Emergency Notification and Communication: State of the Science”

event.[17] Modern mobile communications devices already incorporate many basic technologies that could be adapted with little effort to ensure that persons with disabilities received timely emergency alerts too.

V. CONCLUSION

The Commission should modernize the EAS to require emergency alert messages to be delivered to mobile communications devices, such as cell phones carried by two out of every three Americans. Moreover, for the reasons set forth above, Azos urges the Commission to require the implementation of intelligent reception of emergency communications in mobile devices. This is necessary to ensure a robust, trusted, and technologically-effective public alert and warning system to protect the safety and security of American citizens.

[17] *See Conference and Webcast on Accessible Emergency Notification and Communication*, *at* http://www.tvworldwide.com/events/nod/051102/default.cfm (last visited Jan. 23, 2006).

Respectfully submitted,

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Dated: January 24, 2006

ATTACHMENT 1

TIME IS CRITICAL

Every second counts
in an emergency situation.
First responders and consumers
alike need to receive emergency
communications immediately
regardless of where they are,
when they need it, or what
device they are using.
Azos' solutions provide
this essential capability.
Know immediately
you're not receiving
just another
call!

AZOS™
Personal Intelligence Technology™

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AZOS™

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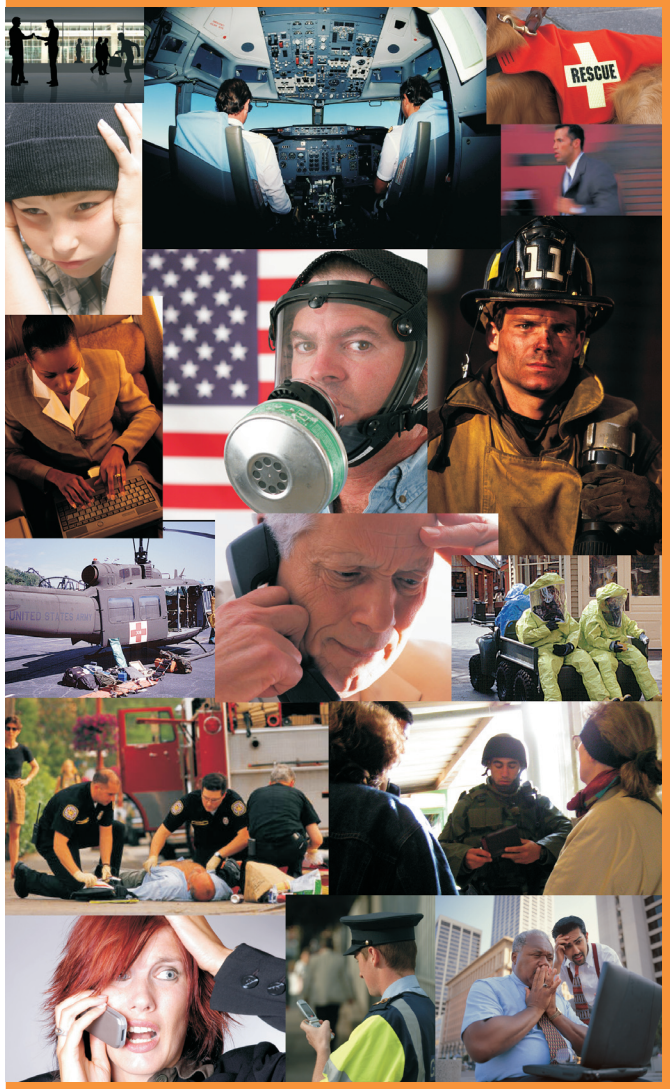

WHEN SECONDS COUNT...

...AZOS Puts Protection in the Hands of Every Consumer

Imagine using wireless devices for emergency communication—your smart lifelink!

Azos' innovative, patented software leverages artificial intelligence to bridge the gaps in existing emergency communication—transforming wireless devices from "passive" receivers to controlled "smart" receivers.

With the introduction of **GetMeNow™** and **Smart Emergency Alert™**, secure, prioritized emergency communication can be received via text/voice/broadcast providing time critical information—anytime, anywhere. Wireless devices become smart lifelinks.

Smart EMERGENCY ALERT™

Get Me NOW™

Wireless devices become "smart" lifelinks for emergency communication.

Driven by today's uncertain environment, the need for effective emergency communication is paramount. Terrorist activities and recent natural disasters exposed critical gaps in current emergency communication. Azos' technology helps bridge these gaps by providing missing links in emergency communication. **GetMeNow™** and **Smart Emergency Alert™** are strategically positioned to become ***new industry standards*** to help save lives in a world of terrorism, natural disasters, and threatening health epidemics, as well as personal emergencies. These solutions improve time-critical reception in any communication device—anytime, anywhere!

GetMeNow™—Personalized emergency communication from selected organizations and individuals

- Distinct personal emergency alert and communication processing
- Adaptive emergency notification with accessibility support
- Instantly blocks undesired callers and false emergency calls
- e-MODE: only allows emergency communication
- Embedded in personal communication devices
- Subscriber enhanced service

Smart Emergency Alert™—Smart reception of the Government's Digital Emergency Alert System (EAS) communication

- Distinct EAS emergency alert and communication processing
- Secure means to avert hackers sending false EAS communication
- Adaptive emergency notification with accessibility support
- e-MODE: only allows emergency communication
- Embedded in personal communication devices

Visit us at www.azosai.com. Contact us at 1-800-504-7116 or email info@azosai.com.

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